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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,406	12/13/2001	Charles E. Wickersham JR.	TSO 190 P2	1167

33805 7590 08/23/2004

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CLEVELAND, OH 44131

EXAMINER

ANDREWS, MELVYN J

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/018,406

Applicant(s)

WICKERSHAM ET AL.

Examiner

Melvyn J. Andrews

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 and 18-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16,17 and 25-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

Applicant is advised that should claim 17 be found allowable, claim 27 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

#### ***Claim Rejections - 35 USC § 103***

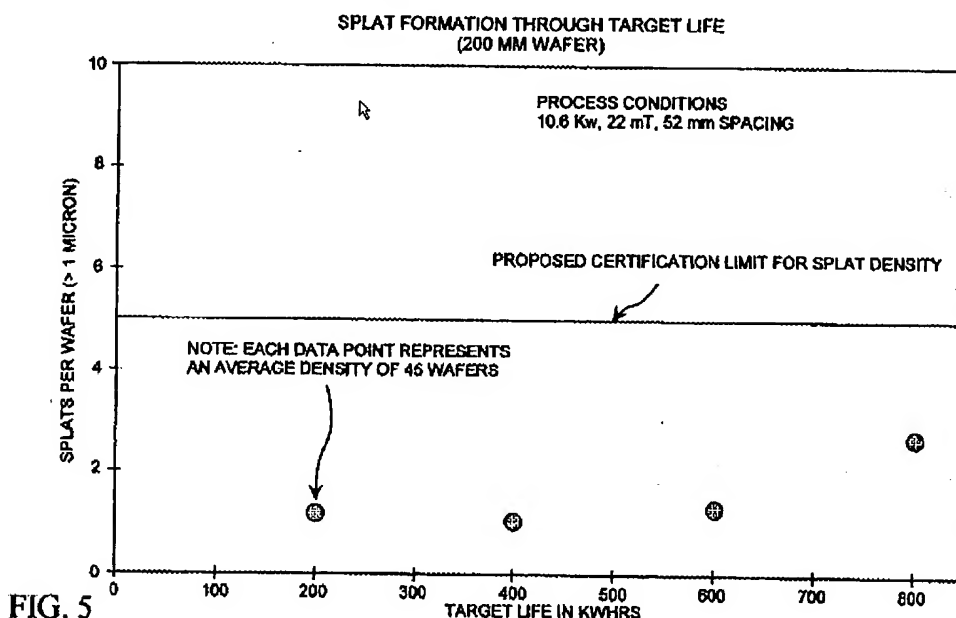
The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 16, 17 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavate et al (US 6,001,227). Claims 16, 17 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavate et al (US 6,001,227). Pavate et al disclose a target having essentially no dielectric inclusions such as metal oxides ( $\text{Al}_2\text{O}_3$ ), nitride precipitates, carbide precipitates, of sizes larger than about 1 micron in concentrations greater than 5,000 such inclusions per gram of target material (col.12, lines 49 to 62) but does not explicitly disclose a target material being substantially free of inclusions of the size of "800 $\mu\text{m}$  and greater" or "400 $\mu\text{m}$  or greater" but the size of '227 inclusions being not "larger than about 1 micron" overlaps the claimed range therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the size range of inclusions the motivation being to avoid localized melting of the target which may splatter onto the wafer.

With respect to Claim 17 Pavate et al does not explicitly disclose "a sputter track area" as claimed but Pavate et al does disclose "Step 308" which refers to the initial burn-in of the target and its subsequent long-term use (col.12, lines 4 to 26) such burn-in will obviously result in "a sputter track area".

### ***Response to Arguments***

Applicant's arguments filed June 7, 2004 have been fully considered but they are not persuasive. Pavate et al discloses a sputter target as shown in FIG.5



**FIG. 5**

a states this particular target had the following characteristics : there were essentially no dielectric inclusions such as metal oxides ( $\text{Al}_2\text{O}_3$ ), nitride precipitates , carbide precipitates of sizes larger than about 1 micron (col.12, lines 49 to 62) therefore the Pavate et al target is substantially free of inclusions of the size "400  $\mu\text{m}$  or greater" or the size "800  $\mu\text{m}$  or greater" . Applicants apparently discovered that "inclusions with

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size greater than about 400  $\mu\text{m}$  are required to produce arcs of sufficient intensity to generate macroparticles" but this discovery does not require that the claimed sputter target contains inclusions of a specific size. The expression "substantially free" means that there are no inclusions of the size "400  $\mu\text{m}$  or greater" or the size "800  $\mu\text{m}$  or greater".

Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavate et al as applied to claims 16 and 17 above, and further in view of Leroy et al (US 5,955,673). Pavate et al discloses that the target metal can be aluminum or an alloy thereof such as  $\text{Al}_x\text{Cu}_y\text{Si}_z$  (col.9, lines 27 to 30) but does not disclose a specific alloy example as claimed but Leroy et al discloses a sputtering target( for example,  $\text{Al} + 1\% \text{ Si} + 0.5\% \text{ Cu}$  ) (col.3, lines 13 to 21) it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the Leroy et al aluminum alloy as the alloy in the Pavate et al method sputtering is used in both cases

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvyn J. Andrews whose telephone number is (571)272-1239. The examiner can normally be reached on 8:00A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on (571)272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mja  
August 19, 2004

  
MELVYN ANDREWS  
PRIMARY EXAMINER